Exploring Motivation to Notify and Barriers to Partner Notification of Sexually Transmitted Infections in South Africa

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Declaration

I, Julia M. Wood (student number WDXJUL006), declare that the work that I have submitted is my own; where the work of others has been used (whether quoted verbatim or referenced to), it has been properly cited using **Harvard** formatting. This project fulfills the Mini-Dissertation requirements for the General Track as required for the Master of Public Health Degree at the University of Cape Town's School of Public Health and Family Medicine. I hereby declare that neither the whole work nor any part of it has been, is being, or is to be submitted for another degree in this or any other university. I empower the university to reproduce- for the purpose of research- either the whole or any portion of the contents in any manner whatsoever.

Signature: Signed by candidate

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Date: 19 February 2017

Dedication

I want to specifically thank my partner, Marlon Dos Santos, for all of his support throughout this process. I would also like to thank my parents, Timothy Wood and Sharon Magliano, for being such tremendous role models and for encouraging me to always strive for the best.

Finally, I would like to dedicate this project to my friend, Dr. Andile Nofemela. You are dearly missed, bhuti.

Abstract

Objectives

This article will review qualitative data from intervention-based counselling sessions to explore barriers to partner notification for men and women who have contracted sexually transmitted infections (STIs) in a township community in South Africa. It will further assess the intervention's impact on participants' motivation and skills to notify their partners about their STI status.

Methods

Relying on recorded counselling sessions from an intervention run by a parent study, this sub-study reviewed 30 transcripts from enhanced counselling sessions with 15 men and 15 women. Participants were adults between the ages of 19-41 (mean age = 28.4) who live within the catchment area of a South African township. Recordings were chosen based on verbal responsiveness of the participant and were manually coded for analysis. In addition, two programme counsellors were interviewed to enhance rigour and to reduce potential bias.

Results

By the conclusion of the intervention session, both male and female participants were motivated to notify their partners face-to-face about their positive STI status. Despite this, misperceptions about the etiology and transmission of STIs, as well as inadequate support from the clinical level and power imbalances amongst men and women emerged as major barriers for the prevention of future STIs.

Conclusions

While the intervention appears to be successful in facilitating partners' intentions to notify, the data shows significant social and structural barriers that will create difficulties for the prevention of future STIs. Participants' persistent concerns about acquiring HIV or their current positive status affect decision-making and therefore, could be a window of opportunity for health-care providers or lay counsellors to discuss STIs in high prevalence areas.

Acknowledgements

As the primary author, Julia M. Wood was responsible for the data selection and data analysis pieces of this research project. The primary author also engaged in one-on-one interviews with the parent study's two counsellors, conducted a literature review, and wrote the drafts that constituted this final project.

Associate Professor Jane Harries was the primary supervisor who was responsible for reading and commenting on drafts as well as assisting with procedural tasks.

Honorary Associate Professor Catherine Mathews was the co-supervisor for this project; she was responsible for the data collection and supervision of the parent study. She also provided the funding for translation and transcription costs, thereby enabling data analysis. Finally, she provided comments on drafts of the manuscript.

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Part A: Protocol

Synopsis

This is a qualitative study that aims to understand the barriers that participants with sexually transmitted infections (STIs) face when notifying their partners about their STI. The study will review transcripts from enhanced partner notification counselling sessions in order to analyse if the sessions are motivating index patients to notify their partners about their STI. Transcripts have already been collected under a parent study ("Enhanced STI/HIV partner notification in South Africa"). Counsellors will also be interviewed in order to gain clarity about barriers and motivation to notify. Overall, the primary research question in this study is what are the barriers to partner notification for STI patients in an impacted area in South Africa? The secondary research question is how do enhanced partner notification counselling sessions affect participants' motivation to notify their partners about their STI?

Purpose

South Africa has a high burden of sexually transmitted infections (STIs), which threatens the progress of its HIV prevention efforts. Numerous factors contribute to these sustained rates, including new infections and reinfection by untreated, infectious partners. Accordingly, increased partner notification and treatment are critical strategies for reducing STI prevalence. In resource-limited settings, partner notification is often the responsibility of the index patient alone. While several interventions have been tested in order to improve the outcomes of patient-led partner notification strategies, most patients still face insufficient counselling regarding how to communicate their infection status to their partners.

As part of an ongoing intervention, this qualitative study will access transcripts of enhanced partner notification counselling sessions in order to identify barriers for partner notification that STI patients face in an overburdened clinic in Cape Town, South Africa. The primary aim of the study will be to explore which barriers exist for male and female participants when notifying their partners about their STI status. The secondary aim will be to review how the current intervention is impacting individuals' motivations and skills to notify their partners. Thus, this

cross-sectional study is necessary for updating existing information about barriers to partner notification while also evaluating the current intervention.

Background

Sexually transmitted infections are a public health threat in South Africa. While much of the research and surveillance around this topic focuses on the country's extensive HIV burden, the scientifically confirmed link between HIV and other STIs validates the need for additional research and investment in STI prevention strategies (Johnson et al., 2011). In addition, high prevalence of STIs is predicted, however there are few "nationally representative" studies that can speak to the rates of infections throughout the country (Johnson et al., 2005). For example, research from the Western Cape found that young women had considerable rates of syphilis (6.2%), chlamydia (32.8%), and gonorrhea (10.9%) while national surveys from antenatal clinics found syphilis rates wavering between 0.3% and 3.8% with recent national figures for chlamydia and gonorrhea unclear (Giuliano et al., 2015; SA Department of Health, 2011). Herpes Simplex Type II rates were consistently higher measuring as much as 65% in a study of women in KwaZulu Natal to an average of 55.8% in pregnant women from Gauteng, KwaZulu Natal, Northern Cape and Western Cape (Daniels et al., 2016; SA Department of Health, 2012). Despite these rates, the treatable nature of many of these infections, and the heightened risk that infected patients have for contracting HIV, STI-specific prevention efforts are not emphasized nationally.

Numerous causes of STI transmission in South Africa have been well documented. Limited tracking and surveillance of infections, historically low rates of condom usage, poor understanding about the infectivity and spread of pathogens, and various matters related to stigma have all played a role in fueling transmission (Mayaud and Mabey, 2004; Shefer et al., 2002; Harrison et al., 1997). Improving prevention efforts has been helpful in combating incidence rates, however each of these efforts requires a holistic approach and commitment from the health system.

In order to bolster these efforts, promoting partner notification has been identified as a necessary strategy for curtailing transmission. Partner notification is critical "to help interrupt transmission of infections, prevent potential re-infection, and prevent complications" (Alam et al., 2010). Still, while enabling partner notification is a desirable target for reducing STI transmission, various barriers exist that prevent individuals from doing so. In Sub-Saharan Africa, these barriers have been attributed to shortcomings in the wider health system such as "inadequate resources, poor infrastructure for diagnosis and management of STIs" and a lack of "provider-oriented notification" due to resource constraints (Alam et al., 2010).

In South Africa specifically, much of the research about barriers to partner notification occurred in the 1990s and early 2000s when researchers found the greatest barriers to be limited understanding of STIs, fears regarding stigma, violence, blame, or abandonment, and "reluctance to notify 'casual' as opposed to 'steady' partners" (Mathews et al., 2001; Harrison et al., 1997). Despite these informative findings, this research was conducted prior to the country's generalised HIV epidemic. Thus, it is important to use qualitative methods to understand the current context under which individuals are prevented from disclosing their infection to their partners. This study will provide a necessary update to the status of partner notification barriers in an era defined by the aforementioned STI and HIV transmission and prevalence concerns.

In addition, various partner notification strategies have been developed and implemented in public health efforts to disrupt transmission patterns and prevent re-infection amongst patients. Four of the main partner notification efforts were identified and measured in a systematic review; these include "patient referral, expedited partner therapy, provider referral and contract referral" (Ferreira et al., 2013). Each of these methods range in provider or patient involvement levels. According to the systematic review of these efforts, there is not "a single optimal strategy for partner notification for any particular STI," however this is due in part to "insufficient evidence to determine the most effective components of an enhanced patient referral strategy" (Ferreira et al., 2013).

In response to this finding, Mathews et al. (2013) have developed an intervention that is currently being analysed in a randomised control trial (RCT). This qualitative study will derive its data from counselling sessions in the experimental arm of this RCT where "enhanced partner notification strategies" are being introduced to STI infected participants (Mathews et al., 2013). Using qualitative methods, this sub-study will seek additional insight about the motivations and skills that are being developed during this intervention, which will be analysed alongside of the barriers to notification that are revealed during the intervention sessions. By doing so, this study will fill current gaps in the literature while informing the efforts of the current intervention.

Methodology

This study will be part of a larger, NHI sponsored study that is currently underway in Gugulethu Clinic in Cape Town, South Africa. The parent study, "Enhanced STI/HIV partner notification in South Africa" (hereby to be referred to as "the parent study") was launched in 2013 under the approval of the South African Medical Research Council (MRC) and the University of Connecticut's Ethics Committees; it is a randomised controlled trial (RCT) that is randomising 1050 participants into one of three research arms. Two arms of the parent study will receive modified versions of the standard of care, varying in the depth of counselling offered to participants. Participants in the third arm will receive a 60 minute enhanced counselling intervention session regarding "STI/HIV education, motivational enhancement, and skills training exercises to both increase self-protective behaviours (i.e. reduce the number of partners and unprotected intercourse, and increase condom use) and increase communication with partners regarding STIs and referrals to services" (Mathews et al., 2013). For quality assurance purposes, these sessions are being recorded.

This study will access a sample of the confidential recordings from these sessions in order to analyse data thematically. One hundred and fifty five recordings were completed within the first year of the trial. This is 44% of the sessions that will be recorded according to the original protocol (n=350). From this, 30 sessions will be selected and reviewed.

The parent study will collect descriptive measures and ultimately analyse the quantitative data that its study design will render (the number of partners who return to the clinic for treatment in each study arm, whether or not the index patient returns for follow-up treatment caused by reinfection, etc.). This study, however, is interested in the "experiences, beliefs and perceptions" that surround participants in the first place (Guest and Namey, 2012).

In order to gain a richer understanding of the participants' context and responses, this study will also utilise in-depth interviews with the parent study's two counsellors. Interviews will be conducted after transcriptions have been analysed in order to follow up on the barriers that the counsellors were able to identify as well as their beliefs about participants' motivation to notify their partners.

According to Ritchie et al. (2014), the sample size for a qualitative study should be defined by the homogeneity of the participants, the selection criteria for the study, the number of sessions that each individual participates in, and the amount of resources a researcher has (Ritchie et al., 2014). The parent study's protocol has screened participants based on the following inclusion criteria:

- Participants are patients who are "currently being treated for an STI"
- Participants are adults (18 years old and above)
- Participants have "residence within the clinic catchment area"
- Participants have consented to take part in the study as indicated through informed consent procedures (Mathews et al., 2013).

The parent study's protocol has several measures for ensuring that respondents fit this criteria including the project enrollment staff verifying the participant's age with his/her photo-ID, leading a conversation about informed consent, and using the participant's referral card from the nurse to ensure that remaining inclusion criteria are met (Mathews et al., 2013). The reasoning to include participants on these grounds are for practical and ethical reasons; extending the

inclusion criteria for a larger group of people would not be necessary nor would research on minors be ethical when adults are available to receive counselling sessions.

The parent study identified two exclusion criteria which included:

- Participants who test positive for HIV on the day of their clinic visit
- Participants who are the "known partner of an index patient" (Mathews et al., 2013).

The purpose of this exclusion criteria is to fulfill the ethical requirements of limiting risks for participants and ensuring data accuracy. While there is no non-verbal verification procedure for this criteria, the risks of these participants being enrolled in the study were mitigated by excluding recruitment by HIV counsellors and specialised staff as well as a recruitment discussion with the project's enrolment staff.

As secondary data analysis, this sub-study will inherently adhere to these inclusion and exclusion criteria.

Because of this small but critical inclusion criteria, it can be expected that a moderate level of homogeneity is present in the population. This will reduce confounding in the results. Participants will only participate in a single counselling session, which means matching interviews and loss to follow-up are not considerations for this study. Therefore, a sample size of 30 allows for a manageable amount of data to be analysed without overstepping the resources available to this project.

The initial intention is to randomly select the sample using a systematic random sampling method in order to ensure scientific accuracy and to reduce bias. Because the parent study has already made extensive efforts to ensure random enrollment into the intervention arm (including enrolling an equal number of men and women to participate in order to reduce the risk of confounding attributed to gender), there is no risk of additional bias in this study. If this random

sampling strategy yields an unreliable sample because of recordings that have verbally unresponsive participants (indicated by counselors speaking for the majority of the sessions) or recordings that are abbreviated (indicated by recordings lasting less than 30 minutes), then recordings will be manually selected by the primary author. This will be necessary in order to maximise the study's resources and to deliver descriptive results.

Sessions have been audio-recorded with a standard audio-taping device; participants were already made aware of the audio-recording device in their informed consent process. Participants were also reminded that their audio-recordings will remain confidential and for research purposes only. They were informed of their right to withdraw from the study at any time because their participation was voluntary. The parent study's authors have created reasonable reimbursement guidelines and because this study is a secondary analysis of that data, no additional reimbursement will be necessary. The audio-recordings were stored at the South African Medical Research Council where they were also transcribed and translated; recordings will be deleted by the end of the RCT as will their transcribed counterparts. All materials are kept in password-locked computers that can only be accessed by researchers.

All sessions were held privately and responses were confidential. Sessions were conducted in either Xhosa or English; they were transcribed, translated, and cross-checked by the parent study's team. Thus, by the time the data reaches this study for analysis, all personal details will have been removed; this will further encourage confidentiality. Any remaining data that could breach confidentiality such as the names of partners or personal, identifying information will be properly anonymised.

All transcribed records will be manually coded for the purpose of analysis. In order to explore the study's primary aim (barriers to partner notification), pre-set codes will include:

- Stigma about infections
- Fear of abandonment/divorce
- Fear of violence

- Concerns about access to care
- Poor knowledge about infections
- Concerns about HIV infection

In order to evaluate the study's secondary aims (the intervention's impact on skill building and motivation to notify), pre-set codes will include:

- Positive comments about the intervention
- Statements indicating changes in attitudes
- Statements indicating encouragement or motivation to notify
- Statements indicating understanding of the intervention material

Emergent codes will be created during analysis according to the study's objectives. This is particularly necessary for issues around HIV; much of the literature about partner notification was conducted prior to South Africa's generalised HIV epidemic. A hypothesized variable would be how HIV concerns impact motivations for disclosure or how these concerns create additional barriers for partner notification.

Ethical Considerations

The parent study has already received required ethical approvals from the South African Medical Research Council and the University of Connecticut's Ethics Committees. Gugulethu Clinic has given permission for the parent study to take place. Participants have already signed informed consent documents after extensive efforts have been made to promote a complete understanding of the research protocol. By the time this study accesses the transcripts, participants' personal information will have already been anonymised. There will be no access to the respondents' names, ID numbers, or official medical records; any reference to a participant's diagnosis will only be due to his/her recount of it during the agreed upon recordings. Thus, no additional informed consent documents from participants will be required.

Before conducting interviews with the two counsellors, they will be asked if they would like to participate in the research. If so, they will be asked to sign an informed consent document (See Appendix A). Their participation will be completely voluntary.

The risks in this study are negligible for both the participants and the community where they reside; risks of potential discomfort and anxiety in the sessions were already addressed and accounted for in the parent study's protocol. By evaluating the recordings, there are no additional burdens to the participants' time or resources.

The benefits to this research are multi-fold. The study will contribute to existing knowledge about barriers to partner notification. It will provide analysis for an ongoing intervention, which could inform the future efforts of this intervention and of the interventions that could be produced from it. It will give a voice to a disenfranchised community that is affected by high STI prevalence, thereby enhancing the evidence base that informs policy-making. Thus, the risks of this study are outweighed by its potential benefits.

It is with these concerns, aims, and objectives that this study protocol was submitted for an expedited review by the University of Cape Town's Human Research Ethics committee. Ethics approval was obtained on the 24th of March, 2016 (HREC Ref. #152/2016).

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Part B: Literature Review

Objectives

This literature review will define and explore the established trends around partner notification of sexually transmitted infections (STIs), including the barriers and facilitators that prevent/enable individuals to notify their partner(s) about their STI. This investigation will begin by discussing the definition, purpose, and types of notification as well as why this practice is important for public health. From there, it will highlight the various barriers and facilitators that have been documented across the literature; these will be broken down into personal, interpersonal, social, and structural barriers and facilitators. Finally, this review will highlight how interventions have been effective enablers for partner notification, particularly in resource limited settings.

Overall, this review will highlight how much of the research around partner notification has taken place in contexts that are dissimilar to the South African setting. South Africa faces a difficult combination of the world's greatest HIV burden, socially established practices reflecting hegemonic masculinity, high rates of sexual assault, widespread disenfranchisement, high rates of concurrent relationships, and limited resources within the health system; these challenges interact to affect partner notification in different ways. By establishing a holistic picture of the partner notification process as well as its barriers and enablers, this review will highlight gaps in the research as it relates to the current South African setting.

Literature Review Search Strategy

Initially, the literature for this review was found through extensive PubMed searches in February through April 2016. Keywords were added and deleted from the search criteria to expand or minimise the search. Keyword searches included "barriers to partner notification, sexually transmitted infections" (57 results) and "motivation to notify, STIs" (13 results). Due to the nature of this study, qualitative studies from African contexts were originally preferred in order to act as a basis for comparison however, because these studies were limited and because many studies from the continent only highlighted the barriers for HIV specific diagnosis, this preference was broadened to include additional study types. From these original sources, several

leads for South African-specific sources were yielded and their references produced national data as well as other sources. Studies regarding same sex partner notification practices and barriers were excluded because the sociological barriers that these individuals may face are not anticipated within this study's data.

After the original PubMed search, STI-specific journals were searched for additional sources. This study is part of a parent study whose sources were also relevant to this literature review because of the overlapping themes that they each explore. Finally, original sources from the aforementioned searches were analysed to determine their relevance to this project; their sources were then carefully examined. These methods yielded the majority of the sources that will be explored throughout this literature review.

1.1 The Impact of STIs

Sexually transmitted infections are a common threat to public health globally. As Low et al. (2006) state, STIs "by their nature, affect individuals, who are part of partnerships and larger sexual networks, and in turn, populations" (Low et al., 2006). At a population level, STIs create a severe impact on the economies of lower-middle income countries where incidence is high; it is estimated that "STIs account for 17% of economic losses because of ill health" (Mayaud and Mabey, 2004). At an individual level, STIs cost patients between 3.3 million and 7 million disability adjusted life years (DALYS) alongside of severe effects on individuals' physical and emotional well-being (Low et al., 2006).

High STI prevalence facilitates HIV transmission. Besides the similar route of transmission that these pathogens have, "it is well known that common STIs promote HIV/AIDS infections in the community" (Lech, 2003). This is largely due to a biological association between STIs and HIV. As Low et al. (2006) explain, there is "an important biological interaction between HIV and other sexually transmitted infections that affects control strategies. STIs, especially those that cause genital ulceration, increase the risk of acquisition and transmittal of HIV infection, and the treatment of STIs reduces the shedding of HIV in genital secretions and plasma" (Low et al.,

2006). This interaction is particularly concerning for South Africa where 2015 estimates of HIV prevalence stood at 19.2%, while STI prevalence rates varied between 5% to 55.8% depending on which infection was being measured (World Bank, 2015; Johnson et al., 2005; SA Department of Health, 2012).

STI transmission is also associated with high risk sexual behaviours. As Cowan et al. (1996) explain, "the distribution of an STI within a community is dependent on both the sexual behaviour of individuals within that community (including rate of partner change, extent of mixing between high and low risk populations, and barrier contraceptive usage) as well as the efficiency of transmission and the duration of infectiousness" that each infection has (Cowan et al., 1996). These risk behaviours relate to some of the sociological realities facing South Africans such as poor STI treatment uptake, "disruption of stable sexual partnerships" due to migrant labour, and high rates of paid sex, particularly amongst young women (Johnson et al., 2007). Altogether, high risk sexual behaviour contributes to sustained transmission rates for STIs and HIV in South Africa.

Finally, an important sociological consideration is that the burden of STIs falls largely on women, who are often asymptomatic. According to World Bank estimates, "STIs, excluding HIV, are the second commonest cause of healthy life years lost by women in the 15-44 age group in Africa, responsible for some 17% of the total burden of disease" (Mayaud and Mabey, 2004). Power dynamics play an important role in STI transmission, particularly for young women who are often unable to negotiate condom use, access barrier contraception, or receive treatment for STIs. In addition, persistent rates of sexual violence against women drive STI incidence. Finally, STI-infected women face a range of challenges that affect their reproductive health; morbidity from untreated STIs can result in a range of pregnancy related concerns including infertility, stillborn births, several perinatal illnesses for babies, and ectopic pregnancies (CDC, 2016). This literature review will place additional focus on the impact of STIs as they affect women.

1.2 Partner Notification and the Strategies that Define It

In low resource settings, syndromic management of STIs is practiced. According to the South African Department of Health, the purpose of syndromic management is "to treat the signs or symptoms of a group of diseases rather than treating a specific disease" (SA Department of Health, 2015). The syndromic approach is expected to include a thorough investigation of the patient's sexual network, including the identification of individual partners and their potential risk for infection. Through this interaction between the patient and the health system, STI control programmes meet some of their objectives including interruption of forward pathogen transmission at a personal and community level as well as the prevention of "diseases, complications, and sequelae" that arise from "untreated infection" (Bell and Potterat, 2011; Mayaud and Mabey, 2004).

Critical to accomplishing these objectives is partner notification. In its most basic form, partner notification is where patients "receive some form of instruction to notify and refer their own partners" (Hogben et al., 2009). This is called patient or self-referral. This method places the patient at the centre of the notification process; the clinician's roles are to empower the patient to understand why partner notification is necessary, discuss methods for the index patient to disclose the diagnosis with his/her partner(s), and perhaps most importantly, encourage the patient to persuade each of his/her sexual partner(s) to seek treatment.

Other strategies for partner notification include provider-led methods in which the provider is responsible for establishing who the members of the index patient's sexual network are and contacting them in order to initiate treatment; this is called provider referral (Hogben, 2007). Because of new technologies, provider referral has developed a range of methods. These methods often include using various communication technologies such as contacting partners over the internet, anonymous text messaging from the clinic to request that partners attend a clinic visit, or phone calls to partners. Additional proactive methods include taking "a network-influenced approach" in which members of similar high risk social groups are contacted, issuing contact cards or letters for the patient to distribute to his/her partner(s), and

providing at-home testing kits that are accompanied by detailed counseling and index patient empowerment (Hogben, 2007; Morris et al., 2014).

A provider-patient hybrid approach to partner notification is expedited partner therapy (EPT). EPT is a method of prophylactic treatment in which index partners deliver treatment to their sexual partners without the partners having to attend a clinic visit (Hogben, 2007). EPT can also include "outreach by field staff to deliver medication or partnerships with commercial pharmacies" (Niccolai et al., 2008). Despite EPT's similarities with syndromic management (treating partners who may or may not be experiencing symptoms without specific confirmation of the diagnosis), there is no evidence that the South African Department of Health is considering EPT as a primary partner notification method.

1.3 Effectiveness of Different Methods of Partner Notification

Conflicting studies highlight the effectiveness of each form of partner notification. Hogben (2007) claims that "systematic reviews of partner notification strategies endorse provider referral as being more effective than patient referral" (Hogben, 2007). Mathews et al.'s (2002) systematic review echoes this finding by explaining how provider referral "or the choice between patient and provider referral… increases the rate of partners presenting for medical evaluation" (Mathews et al., 2002). These studies indicate that partners' presentation for treatment is evidence for the effectiveness of provider referral; because this should be every provider/health system's goal, provider referral should therefore be the recommended practice.

This finding is disputed, however, by a more recent systematic review. According to Ferreira et al. (2013), their systematic review of 26 trials with nearly 18,000 participants "does not identify a single optimal strategy for partner notification for any particular STI" (Ferreira et al., 2013). This finding highlights how dynamic partner notification can be, especially as newly emerged methods and technologies have been adopted across various health systems. In part, this study aims to update a recent gap in the literature by qualitatively analysing the impact of the parent study's intervention sessions on partner notification intentions.

In their study from South Africa specifically, Young et al. (2007) evaluated the difference between self referral and EPT and found that most study participants selected the latter as their notification method (Young et al., 2007). Their reasoning for this method was "because partners would not have time or would not want to attend a clinic, and to ensure that partners received treatment" (Young et al., 2007). The findings were demonstrative; almost all partners in the study either took their treatment in front of the female participants or chose to go to the clinic. This study is therefore an encouraging sign that newer partner notification methods may have an effective reach in a South African setting.

Due to the complex realities of partner notification in practice, a distinction must be made between effectiveness and acceptability. In their study of 2,500 STI patients in the United Kingdom, study authors found that "the most favoured method of partner notification was patient referral" (Apoola et al., 2006). Similarly, findings from a study of syphilis patients in Bolivia found that male partners who were notified by their partners rather than by providers were significantly more likely to complete their treatment (Diaz-Olavarrieta et al., 2011). In addition, newer research highlights that while electronic notification methods for STI diagnosis such as E-cards or SMS text messaging may be acceptable, they are not always utilized by patients (Pellowski et al., 2016). Finally, a study from a large urban setting in the United States showed that 94% of its participants wanted to practice self-referral, but they also found EPT to be acceptable (Jones et al., 2013). These three studies come from different settings, however they all use quantitative data to conclude that self-referral is the most acceptable form of partner notification for patients. Jones et al. (2013) and Diaz-Olavarrieta et al.'s (2011) data highlight how this is particularly true for female STI patients. This study will evaluate how South African men and women consider the partner notification methods they are presented with; using qualitative methods, it will interrogate the conditions that surround their decision about whether or not to notify their partner of their STI.

1.4 Most Commonly Reviewed Barriers/Facilitators for Partner Notification

1.4A Personal Barriers and Facilitators

Several personal factors act as barriers and/or enablers to effective partner notification. These factors include guilt or shame, individuals' self-efficacy, and concern for one's health. Generally, patients' socio-demographic characteristics had no impact on the likelihood of notification (Gursahaney et al., 2011; Thurman et al., 2008).

Feeling guilty or shameful about the presence of an infection acted as both an impediment and as encouragement for partner notification. A study of Peruvian women with syphilis cites "'feeling responsible' for the infection" (especially if the women had multiple partners) as one of the primary barriers for partner notification (García et al., 2015). Adams et al. (2015) echo this finding in their study of STI patients in Barbados; they explain how the small nature of the island advances "shame, stigma, and discrimination" for testing to even occur in the first place (Adams et al., 2015). Thus, while the context of partner notification varied in these disparate settings, these studies are united by the finding that shame or guilt act as a barrier to partner notification.

Despite feelings of shame, some research suggests that shame is only an initial reaction that transforms into an enabler for partner notification. For example, a study of individuals with chlamydia in Australia highlights how "despite their initial feelings of shock or shame, the majority of patients felt a strong obligation to personally inform their partners" about the diagnosis because of a "sense of responsibility" or "as a social duty" (Temple-Smith et al., 2010). Morris et al.'s (2014) study of black males in an urban centre in the United States explains how even getting marginalised groups to test for STIs will detract from feelings of shame because "when one receives a positive result… it requires acceptance that anyone can get an STI and… in most cases these are easily treatable. [Therefore]... the situation is not as bad as had been imagined" (Morris et al., 2014). Thus, while shame might originally create barriers, it can also instigate behaviour change that will enable partner notification.

Several studies cite patients' motivation to notify as a measure to avoid re-infection and protect one's personal health (Niccolai et al., 2008; Temple-Smith et al., 2010). This enabling support

for partner notification was found amongst women in disparate settings. In a study of adolescent girls in a low income setting in the United States, the authors identified that the girls' "self-protective instincts" were activated when considering the importance of partner notification (Lim et al., 2005). Women were often able to prioritise their "assessment of personal risk" of the infection above concerns about partner notification consequences more broadly (Klisch et al., 2007). Women also felt accountable to notify their partners due to concerns for their health during pregnancy (Diaz-Olavarrieta et al., 2011; Moyo et al., 2002).

While concern about one's personal health clearly seems to facilitate notification, this facilitator will only be enacted if index patients understand the value of notification. Studies from various African contexts suggest that patients are rarely offered necessary education and counselling to understand their diagnosis. For example, a study of STI patients in an urban Zambian clinic found that the "majority of [patients] did not know that they were receiving treatment for STIs" (Faxelid, 1994). In South Africa specifically, a study of syphilis patients found that 50% of the women "received no information on why the [syphilis] test was taken" while only 63% of women in the study knew "that syphilis could be sexually transmitted" (Beksinska et al., 2002). These studies disregard the assumption that partner notification is always- or even frequently-preceded by sufficient health system support (including basic counselling about the purpose and importance of partner notification). This study will interrogate the current reality in South Africa. Are patients responding to their STI diagnosis with Lim et al.'s (2005) claim of a self-protective instinct or are supportive conditions lacking for them to do so?

A final personal factor that is positively associated with partner notification is self-efficacy. This concept is defined by Fortenberry et al. (2002) in their study of American adolescents; in it, they explain that "self-efficacy refers to a person's beliefs about his or her capacity to perform specific behaviours in specific situations" (Fortenberry et al., 2002). As a result, individuals who had higher self-efficacy were more likely to notify their partners about their STI. Buchsbaum et al.'s (2014) study of African American teens reiterates this finding. In it, the authors found that "two thirds of participants were classified as having high self-efficacy for partner notification"

which was often related to the participant's age and partnership types; in the end, their study found that over three quarters of participants had notified "their most recent sexual partner of their positive STI diagnosis" (Buchsbaum et al., 2014). Finally, Schwartz et al.'s (2006) study agrees that self-efficacy predicts behavioral intentions and attitudes about notification, however "greater alcohol use" becomes an off-setting factor for successful notification (Schwartz et al., 2006). Based on these studies, a personal attribute like self-efficacy is clearly a facilitator to effective notification, however this can be mitigated by increased alcohol use.

1.4B Interpersonal Barriers and Facilitators

Across various settings, authors consistently found that partner type was one of the most important barriers or facilitators for partner notification (Pavlin et al., 2010; Wang et al., 2012; Chacko et al., 2000; Gorbach et al., 2000). The inability to locate or name partners was a concern for male and female patients throughout the literature (Niccolai et al., 2008; Adams et al., 2015; Clark et al., 2007). This technical barrier poses a threat to wider public health efforts for the obvious reason that such partners may not be aware of their exposure and will continue transmission within their sexual networks.

Partner type determining notification practice was also explored in African settings like Zimbabwe and Kenya. In a study of Zimbabwean patients, the aforementioned personal concerns as well as fear of abuse and/or abandonment still did not deter partners from notifying because of their concerns about the long term effects of an untreated infection. Male participants were concerned that unprotected sex with their wives while they had an untreated infection would result in infertility; therefore, the long term status of the relationship made notification for their wives more important than for their casual partner(s) (Moyo et al., 2002). Similarly, a Kenyan study of STI patients found that casual partners of index patients were less likely to be notified than main partners; this was due, in part, to the index patient's inability to locate or contact casual partners (Wakasiaka et al., 2003). Altogether, STI patients employed practical reasoning to assess which of their partners to notify.

Individuals frequently expressed concerns that their partners would accuse them of infidelity upon notification, however these concerns did not always prevent notification (Medley et al., 2004). In fact, in some studies, patients' awareness of the STI acted as a way to confront suspected infidelity from their partners (Buchsbaum et al., 2014; Temple-Smith et al., 2010). This trend is explored in Moyo et al.'s (2002) article in which women looked forward to notifying "in order to get information on the source of the STI, possibly to address infidelity in the marriage," however they simultaneously feared that "their husbands would accuse them of being the source of the STI if they raised the subject first" (Moyo et al., 2002). This dynamic indicates that while the interpersonal power relationship between men and women could prevent notification, the possibility of confronting a partner's behaviour facilitates it.

A similar contrasting set of notification behaviours amongst women include their motivation to notify in order to protect their partner's health versus their resentment towards their partner preventing them from notifying. According to Alam et al.'s (2010) study, "women and married individuals may be motivated through interdependency to help their partners remain healthy" (Alam et al., 2010). This is supported by Thurman et al.'s (2008) study of American women who would notify their partners based on their pregnancy intentions with that partner in the future (Thurman et al., 2008). While this bolsters the finding that long term partners are most likely to be notified, it also highlights specific considerations cited by women. These studies stand in contrast to García et al. (2015) and Lim et al.'s (2005) studies of female patients in Peru and the United States. As García et al. (2015) explain, "attitudes toward notifying partners were contingent on who the patient deemed had been 'at fault' for transmission" (García et al., 2015). This finding was reiterated in Lim et al.'s (2005) study of female adolescents. In each of these studies, the participants still went on to notify, but this was facilitated by detailed provider counselling with the participants as well as other motivating factors.

A major barrier to notification that was cited throughout the literature- and most frequently by women- was the threat of violent reactions from partners. This threat was real in some cases where violence had already been experienced in the relationship (Decker et al., 2011; Gorbach et

al., 2000), and it was perceived in many other studies (Medley et al., 2004; Adams et al., 2015). The percentage of women fearing violence varied significantly per study; between 6%-33% of women feared "blame and/or violence" in two separate Kenyan studies while 44% of women in an American study were "worried about physical violence after partner notification" (Gichangi et al., 2000; Wakasiaka et al., 2003; Jones et al., 2013).

There is a gap in the literature regarding violence as the result of partner notification in South Africa, however, gender-based violence against women is frequently cited as a driver of STI transmission more broadly (Kalichman et al., 2005). In their recent study of South African adolescents, Teitelman et al. (2016) highlighted how intimate partner violence against girls had an adverse effect on condom usage while also positively associating with concurrent relationship frequency amongst boys (Teitelman et al., 2016). Intimate partner violence is generally considered to be one of the "structural pathways to HIV risk," particularly in high risk areas like South Africa (Krishnan et al., 2008). Thus, with the documented realities of STIs and power imbalance in the country, this study aims to update the gap in the research by interrogating if intimate partner violence acts as a barrier for notification for South Africans.

Admittedly, violence was defined differently across the literature, which may have impacted the number of participants who considered it to be a barrier. For example, Klisch et al. (2007) included yelling and insulting as a form of violence amongst their participants, while Clark et al. (2007) did not include fear of abandonment or embarrassment as violence (even though participants in this study came from a high risk community in Peru where these fears materialising could create severe consequences, especially for women) (Klisch et al., 2007; Clark et al., 2007). Chacko et al. (2000) summarise the concepts of general fear, fear of rejection, and fear of embarrassment under the title of "negative emotional response from the partner" (Chacko et al., 2000). In their study, this response was both the anticipated and actual reaction from male partners of young American women. Additional studies add that the fear of losing the relationship could act as a barrier to notification (Reed et al., 2015; Wang et al., 2012).

Concepts like fear of rejection or abandonment may have varying consequences based on power dynamics in relationships and the settings where this might occur. Men's reasoning for notification (or not notifying) is cited less often in various studies because of general concerns for women as a marginalised group. This study will employ gender sensitivity in order to analyse the interaction between interpersonal realities and partner notification.

1.4C Social Barriers/Facilitators

One frequent finding in the literature is the impact of stigma on one's decision to notify his/her partner(s) about an STI diagnosis (Liu et al., 2002; Wang et al., 2012; Pavlin et al., 2010). Morris et al. (2014) clearly explains how stigma might play a role in partner notification for STIs by discussing their findings amongst black American adolescents; as their study explains, "stigma involves the belief that others, rather than your own feelings, are conferring negative attributes on you," which in turn, hinders partner notification intentions (Morris et al., 2014). Their study emphasizes the importance of one's setting as adding to stigma; this is particularly the case for groups that are already vulnerable or who come from particular cultural backgrounds (Adams et al., 2015; Pavlin et al., 2010).

Like Morris et al.'s (2014) findings, other studies about young STI patients recount stigma as being a primary barrier to notification. Young people were likely to fear gossip and/or embarrassment from partners if they were to notify about their STI (Gorbach et al., 2000; Reed et al., 2015). These professed concerns for adolescents complement other findings from the literature which state that older individuals are more likely to notify than younger STI patients (Buchsbaum et al., 2014; Lim et al., 2005). Altogether, these findings suggest that partner notification not only needs to be explained to younger patients in terms they can understand, but that counselling must also relate to their concerns about the stigma associated with their diagnosis. Qualitative research is helpful in exploring these trends, which was a consideration of this study design.

There were points in the literature when stigma was cited as concerning, but not inhibiting for notification (Gursahaney et al., 2011). For example, a study from Guatemala states how "fear of stigma was mentioned by most of the women, but was not identified as a barrier to intend to refer partners" (Sabidó et al., 2012). This finding suggests that providers should be equipped with methods to disable patient concerns about stigma while still conducting a deeper investigation into individuals' barriers for notification.

There have been limited studies regarding stigma for STI diagnoses and partner notification that are specific to the African context. This is due in large part to the continent's persistent concern about HIV specific stigma, which overshadows discussion of other STI infections (O'Farrell, 2001). When stigma is discussed, it is often done so by exploring attitudes from the community rather than from a point-of-service interaction with health providers (Shefer et al., 2002). Recent qualitative data about this topic appears to be lacking. Therefore, it is necessary to address this gap in the literature regarding how stigma might present in STI health-care seeking and partner notification promotion in an African setting. This study will use qualitative methods to investigate if stigma is a barrier for partner notification, particularly if individuals are also vulnerable to the aforementioned personal and interpersonal concerns cited in this review.

A less explored barrier in the literature is individuals' history of drug or alcohol use as being a barrier to notification. Schwartz et al. (2006) highlight how substance use can be an "important psychosocial factor that influences notification" particularly because those who abuse substances were positively associated with additional sexual risk behaviours like concurrency and increased numbers of casual partners (Schwartz et al., 2006). This is relevant to the South African context where alcohol consumption has been cited as a significant "risk factor for STIs" due to its effect on concurrency and failure to use barrier methods of protection (Johnson et al., 2007). The extent of alcohol use acting as a barrier to notification presents a gap in the literature, which may be anticipated in this study's data.

Finally, applying a gender lens highlights subtle issues about male reluctance to seek STI treatment due to socially acceptable practices. For example, in Gichangi et al.'s (2000) study of pregnant women with syphilis in Kenya, they found that as many as 23% of male partners "had not sought treatment mainly because they felt healthy" (Gichangi et al., 2000). García et al. (2015) reiterated that male partners related to their study did not want to seek treatment because their potential infection was asymptomatic (García et al., 2015). In South Africa specifically, men were believed to be treated better when presenting with STI symptoms because women were considered to be the reservoir for the infection (Shefer et al., 2002). These findings speak to gendered power imbalances that prevent notification from taking place effectively. If men are less likely to seek treatment and women are more likely to be blamed for the infection despite their desire to receive treatment, then specific considerations must be made to update counselling for partner notification. These attitudes are based on larger social concerns about gender and STIs, which require further research.

While social factors should always be considered when examining patient concerns, this section provides brief insight to the social barriers that prevent effective partner notification. Social barriers exist on a continuum of wider societal considerations such as the disenfranchisement and vulnerability of certain groups, power imbalances between women and men, and stigma around sexual health. This section postulates that social concerns are not cited frequently enough in African contexts because of overpowering concerns about HIV-specific stigma. While HIV is also sexually transmitted, this individual infection requires specific considerations; literature about HIV specifically was therefore excluded from additional exploration.

1.4D Structural Barriers/Facilitators

In order to have an effective partner notification support system for patients, health systems should have optimal conditions for health workers (including sufficient time for patients, training, diagnostic tools, and patient tracing protocols), spaces where patients feel free to obtain non-judgmental services, and clear guidelines for how to manage the index patient and his/her partners. Settings where these resources are lacking (or are perceived to be lacking) create

barriers for patients to utilise the health system and in turn, perform partner notification (Wang et al., 2012).

Even in resource rich settings like Australia and the Netherlands, providers discuss structural barriers to facilitate methods of effective notification. In their study of general practitioners in Australia, Pavlin et al. (2010) found that providers faced a "lack of time and staff, lack of contact details, uncertainty about the legality of contacting partners and… feeling both personally uncomfortable and inadequately trained to contact someone who is not their patient" (Pavlin et al., 2010). General practitioners cited similar concerns in the Netherlands in addition to their concerns about a lack of "feedback on the effectiveness of partner notification" from an organisational level (Theunissen et al., 2014). These studies highlight that the decision about which partner notification method to promote is often not standardised and is frequently subjected to how individual providers are able to manage STI diagnosis.

Communication between patients and their health care providers needs to be clear and delivered in language that encourages partner notification. Findings from studies in the United States and China similarly show that visits with medical professionals can act as barriers to notification because patients are not made aware of its importance. For example, a study of male STI patients found that "only 52% [of patients] had received any [STI] education when they sought treatment" (Liu et al., 2002). This was mirrored in a study from the United States where patients were found to have "a lack of understanding of or concern for the consequences associated with an STI" after their interaction with a provider (Reed et al., 2015). Omitting this interaction ultimately acts as a barrier to partner notification because patients are not educated about its importance.

Distrust of the health system was cited in disparate settings across the literature. For example, a study from Barbados highlighted how "an isolated breach of confidentiality might cause a significant loss of trust in the system;" because STIs were such a sensitive issue for patients, they did not want to risk the possibility that their health care worker might disclose their STI to others

(Adams et al., 2015). Concerns about health worker-patient interactions were also cited in a country as large China. A systematic review of partner notification in China showed that wider structural issues for health workers including "limited time and trained staff… and lack of partner notification guidelines" all contributed to a general "mistrust of health workers" (Wang et al., 2012). Trust in health workers' ability to manage the infection and to maintain patient confidentiality are critical prerequisites for successful partner notification. Uncertainty about health care workers is part of a larger structural context that must be evaluated in order to oversee successful partner notification practices; this study will analyse if this uncertainty is a barrier to partner notification amongst South African patients.

In Sub-Saharan Africa, structural barriers can be related to resource availability, poor infrastructure, and human resource gaps. STI management, particularly regarding partner notification, is often affected by these challenges. In studies from Zambia, Swaziland, and South Africa, researchers found gaps in how STI patients were instructed to manage their care. In Swaziland, for example, positive syphilis diagnoses were only shared with 38% of pregnant patients who had been screened; despite the danger of the diagnosis for the mother and her baby, less than half of the patients were properly treated for the infection (Lech, 2003). Rates of notification were even more dismal (the study found that only 5% of male partners "were traced, checked, and correctly treated"), which matched the findings of an earlier Zambian study where there was an absence of providers who encouraged notification (Faxelid, 1994; Lech, 2003).

In South Africa, various provider behaviours were found to be inadequate. These failures included poor or non-existent counselling about infections, minimal to no training in disease management and counseling, and providers who were unaware about standards for care required by positively diagnosed patients (Beksinska et al., 2002). These provider behaviour trends continue in current literature from South Africa. According to a recent study from Gauteng province, health care providers in the public sector were found to have limited knowledge about STI case management, starting with a lack of understanding about diagnosis and treatment (Ham et al., 2016). These findings highlight the structural barriers that pose challenges for STI patients

even before notification can occur. This study will use qualitative data to investigate if these barriers exist amongst STI patients in Cape Town, followed by how patients' notification intentions are affected.

Access to correct and appropriately pitched information, trust in health care workers and the system they are a part of, and well trained providers are all important for securing a conducive environment for partner notification to take place. Studies have shown that a supportive provider can be one of the most critical facilitators for partner notification (García et al., 2015). The next section will build on this finding through a brief exploration of effective partner notification interventions.

1.5 The Purpose of the Parent Study: Interventions are the appropriate middle ground

It has been established that partner notification is a necessary tool for the prevention of ongoing STI transmission, but there are various barriers that exist for STI patients to effectively notify their partners. This final section will review some of the solutions that have been proposed to advance partner notification in practice.

Research indicates that a single session intervention can be effective in preventing STI acquisition. According to a meta-analysis of single session interventions for over 50 thousand individuals, Eaton et al. (2012) found that STI incidence was "35% less likely among intervention group participants than among control group participants" (Eaton et al., 2012). If the intervention was offered during routine visits for individuals, at-risk patients would learn about infections "during a teachable moment," which is an easy and minimal resource undertaking (Eaton et al., 2012).

Studies from across various settings continually advocate for "involving index patients in shared responsibility for the management of their sexual partners" as an effective measure for improving partner notification outcomes (Trelle et al., 2007). The decision about which health care provider should be assigned this task ranged, however, the message was clear that even

basic changes to consultations such as strengthening patients' communication skills would lead to improved outcomes (Young et al., 2007). Additionally, the conclusion of an aforementioned systematic review of partner notification practices acknowledges that "verbal, nurse-given health education together with patient-centred counselling by lay workers" has the potential to positively impact partners' treatment rates (Mathews et al., 2002). Combined, these studies show that including index patients in health education can have a positive effect on their outcomes and this can be done effectively in resource limited settings.

Some of the communication skills discussed with patients came from generalised practices. For example, research from the Netherlands studied motivational interviewing in which providers would encourage patients to centre their attention on a behaviour change that they would like to accomplish; they would then lead patients to confidently practice their communication skills in order to address that behaviour (Op de Coul et al., 2013). As providers put this tool into practice, they found that it was a useful and feasible way to enhance patients' partner notification skills. This echoes the aforementioned findings from Fortenberry et al. (2002) which highlight how increasing patients' self-efficacy is a critical tool in enhancing notification and therefore, "interventions to improve notification self-efficacy may be important even for patients who voice no intention of notifying" (Fortenberry et al., 2002). Thus, interventions have the potential to increase partner notification outcomes because of their positive impact on index patients' understanding of the infection, communication skills, and self-efficacy.

The importance of interventions is of particular salience in African settings which are often under-resourced. Studies from Kenya and Zimbabwe both advocate for single counseling sessions in order to increase partner notification (Wakasiaka et al., 2003; Moyo et al., 2002). Because the effectiveness of these sessions appears to be high and they can be carried out with context-sensitive terminology, interventions can be a helpful tool for increasing partner notification. Still, as Ferreira et al. (2013) argue in their systematic review, "there is a need for more evaluations of interventions combining provider training and patient education, and for evaluations conducted in developing countries" (Ferreira et al., 2013). There is a continued gap

in research from African settings regarding where and how interventions are being conducted. This literature review prefaces a qualitative study that will monitor such an intervention. The parent study has trained lay workers to provide single session interventions that combine education for STI patients with communication skill building. Therefore, this qualitative study will address these gaps in the research, especially because it is conducted in a low-resource South African township.

Conclusion

This literature review concludes that partner notification is a necessary strategy for reducing STI incidence and prevalence at individual and community levels. There are several barriers and facilitators that create challenges and conditions for individuals to inform their partners about their STI. These barriers and facilitators present themselves at personal, interpersonal, social, and structural levels and across disparate settings. The purpose of this study is to review the barriers and dynamics as they exist for South Africans who are participating in single session interventions. The study will also evaluate how the intervention impacts the participants who are receiving it.

This comprehensive literature review will inform the qualitative data that is being collected for this study because it has presented an array of barriers and facilitators that might exist for participants in the study. Furthermore, this literature review has highlighted how African settings should be examined in order to create optimal conditions for patients to notify their partners about their STI. Finally, this review has advocated for a gender-sensitive analysis of barriers and facilitators because of concerns that exist for women when notifying their partners about their STI.

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Part C: Journal Ready Article

Exploring Motivation to Notify and Barriers to Partner Notification of Sexually Transmitted Infections in South Africa

Introduction

South Africa has one of the world's largest burdens of HIV infection, which is accompanied by high rates of other sexually transmitted infections (STIs) (Naidoo et al., 2014; Johnson et al., 2005). Patients with STIs face an increased biological risk of HIV acquisition because of the virus' invasion of the immune system through genital lesions and/or inflammation caused by STIs (Mayer and Venkatesh, 2011). Furthermore, STIs are known to cause a range of adverse consequences for patients in their own right including infertility, neonatal conditions for the newborns of STI-infected women, ectopic pregnancies, and certain cancers (Low et al., 2006). There are also social consequences to these infections, particularly for women who are not only more likely to be asymptomatic, but are also more likely to struggle with poor access to health-care, stigmatising and judgmental attitudes from society and health care providers, and intimate partner violence (Mayaud and Mabey, 2004).

One of the most effective mitigators of on-going STI transmission is partner notification. Partner notification constitutes a range of methods for informing index patients' sexual partner(s) about their STI exposure, followed by encouraging those partners to accept treatment; these methods can include notification directly from the index patient or via the clinician who diagnoses the infection (Hogben, 2007). Like many middle and low income countries, index patients in South Africa often bear the sole responsibility of notifying their partners about their STI.

Research from various settings has suggested that partner notification can be best facilitated through single session interventions in which a nurse or lay counsellor explains the importance of partner notification as an effective strategy for interrupting forward transmission of pathogens and protecting one's sexual network (Eaton et al., 2012; Mathews et al., 2002). This qualitative study reviewed transcripts from enhanced counselling intervention sessions that were conducted during a parent study; the parent study sought to analyse partner notification outcomes between three groups receiving different counseling packages in an impoverished South African

township. The objective of the parent study was to measure the outcomes of partner notification practice after participants received enhanced counselling sessions emphasizing its importance; the parent study will compare these participants' partner notification outcomes with two groups that did not receive the same intervention. The purpose of this qualitative sub-study was to explore how participants perceived partner notification, particularly regarding barriers to effective notification. In doing so, this study assessed the impact of enhanced counselling sessions on participants' motivation and perceived skills to notify their partners about their STI.

Methods

The parent study was a three arm randomized trial where participants were allocated to three different counseling interventions of varying intensity. These arms included an enhanced standard of care group that received a 20 minute STI and HIV education session, a group that received STI and HIV education as well as information regarding risk reduction, and an intervention group that received a 60 minute educational and motivational enhanced session regarding STI and HIV education, risk mitigation, and effective partner notification strategies. The intervention arm utilised flip charts, trained counselors, and interactive activities to underscore its lessons and to build participants' partner notification and communication skills. This sub-study examined 30 transcripts from the 60 minute enhanced counselling sessions, which were undertaken by trained lay counsellors during the parent study.

The South African Department of Health's guidelines regarding STI management are based on syndromic management in which individuals are treated for most STIs according to their symptoms rather than laboratory confirmation of specific pathogens (SA Department of Health, 2015). Thus, participants were referred to participate in the parent study based on the nurse's diagnosis of an STI and recommendation for STI treatment at the clinic where the parent study was taking place. From there, participants were recruited and upon providing their consent to participate, they were screened to meet the parent study's inclusion criteria. In order to participate, trained recruitment staff from the parent study would verify that the participant was above the age of 18 and living within the study's catchment area. The study's catchment area

was an impoverished township in an urban setting in South Africa. Individuals would be excluded from participating in the study if they were the known partner of an index patient or if they had tested positive for HIV during their current visit; these provisions were meant to preserve data integrity and to fulfill the ethical obligation of causing no harm to participants.

For quality assurance purposes, the parent study's enhanced counselling sessions were recorded. These intervention sessions included an interactive discussion about the participant's knowledge of STIs, image guided discussions about particular STIs and their routes of transmission, and finally, an exploration of the participant's personal sexual network. At this point, the participant was invited to consider communication strategies for notifying his/her sexual partner(s) about receiving treatment for an STI. Participants were offered choices of several notification methods including face-to-face notification, notification via a letter or text message, or notification directly from the clinic. The intervention sessions were conducted by female lay counsellors who were trained by supervisors from the parent study.

Initially, this sub-study randomly selected 30 recordings from the 60 minute enhanced counseling sessions conducted between 2014 and 2016; this selection process rendered an inadequate sample because they included sessions that were cut short (denoted by recordings that lasted 30 minutes or less) or more frequently, they included sessions where the participant was verbally unresponsive (denoted by the counsellor speaking for the majority of the session). At this point, the primary author individually reviewed 230 enhanced session recordings and purposively selected 30 of those sessions based on unreserved verbal interaction between the interviewer and the participant. The counselling sessions were all conducted in a local language.

Transcripts from fifteen men and fifteen women's counselling sessions were translated from isiXhosa to English, transcribed, and analysed. In addition, the study's two counsellors were included via one-on-one interviews with the primary author; the purpose of these interviews was to triangulate participants' responses and to enhance analysis. The transcripts were manually coded; the primary author reviewed transcripts in their entirety, identified prominent themes, and

coded and categorised the responses within those themes. Codes were derived from the data and were eventually grouped under three major themes followed by sub-themes. All personal identifiers were changed in order to enhance confidentiality and anonymity. Informed consent for the sessions to be conducted and recorded was obtained through the parent study; interviews with counsellors were preceded by signed informed consent. Ethics approval was obtained from the University of Cape Town's Human Research Ethics Committee.

Results

The study found that most male and female participants were motivated to notify their main partners about their STI and believed that their partners would attend a clinic visit. Males were more likely to have concurrent partnerships with more than one partner; this was an inhibiting factor for notification because male participants intended to notify their casual and/or anonymous partners less frequently. Women were also motivated about notifying their partners, however their reasoning for doing so was often explained as a matter of practicality: they had previously notified their partners about an STI, they were concerned about their health generally, or most frequently, they knew that their partners had other partners and understood how notification could prevent re-infection. The ages of the participants ranged between 19-41 (mean = 28.4).

Both male and female participants were most likely to select a face-to-face method of notification. Few men opted for other notification methods, however some male participants requested phone calls or clinic intervention in order to reiterate their face-to-face notification method or because their partner was in a different province. Almost every woman in this study intended to notify her main partner face-to-face. Few exceptions to this included women who sought additional support from the clinic in order for their partner to take face-to-face notification more seriously. Several women opted for a phone call or text message as their method of notification for casual partners. Generally, the professed preference for face-to-face notification correlated with participants' motivation to notify.

In some sessions, participants were either unclear about their notification intentions or did not follow the session's activities due to interruptions raised by the participant. A total of 5 participants (2 women and 3 men) did not need to notify their main partners because the partners had already attended a clinic visit.

Concerns about HIV acted as an important motivation for notification. A frequently cited belief was that untreated STIs would become HIV. As a 30-year-old female participant explained:

> *If you have an STI in your body, like if you don't treat it, it causes you to be infected with HIV- if it has been there for a long time without being treated, if you just left it like that.*

While participants' HIV status was not explicitly solicited, participants often revealed their positive HIV status with counsellors during their intervention session; participants' HIV status was reflective of high incidence areas in South Africa. For participants who professed a positive HIV status, there was frequent concern about staying healthy and protecting themselves despite their STI. As one 31- year-old woman expressed:

> *If he keeps on giving me these things, I will end up sick or the antiretrovirals are not going to work. Tomorrow STI. Tomorrow STI…. I warned him that… I will go to the police, because I don't want it with my health... because I know I am [HIV] positive and I want to keep myself safe from all these things.*

Alternatively, for those who were HIV negative, there was a commonly discussed fear of contracting the virus that acted as a motivation for both taking STI treatment and for notifying one's partner about the STI. Thus, concerns about one's positive HIV status or fears of acquiring the virus through risky sexual behaviour, untreated STIs, or re-infection all served as a facilitator to partner notification amongst participants.

While data from the intervention highlighted participants' intentions to notify their partners about their STI, they also showed significant social and structural barriers that will create

difficulties for the prevention of future STIs. Three broad categories were identified as potential barriers to notification: health education, health system, and interpersonal barriers.

Health Education Barriers

Participants rarely identified how one might contract an STI, but rather, relied on gendered beliefs to explain transmission. For example, STIs were frequently cited as being the woman's fault, either because of her behaviour during intercourse or because of menstruation. As a 26-year-old male participant explained:

> *She was just finishing her period; after having sex with her, I saw blood. So I just added those things together. She was on her period and there is this dirty thing [the STI]. I looked at that information and thought: she gave this to me intentionally.*

Beliefs about women as STI carriers also stood out to the counsellors who found debunking these beliefs for men to be particularly challenging. In order to do so, counsellors often tried to shift participants' attention from who was responsible for transmission to how the participant can interrupt forward transmission of the STI.

Additional beliefs about STIs were that they were either self-generating or the result of poor hygiene. In addition, misperceptions about STI etiology were sometimes based on various disparate, but localised concerns such as witchcraft, tuberculosis diagnosis or medication, or shared public toilets in or around the township community.

Health System Barriers

During their counselling session, almost half of the participants described experiences of inadequate or minimal support from the clinic during their most recent visit. This included receiving incorrect information, not receiving any instruction about condom usage or partner notification after a positive STI diagnosis, and/or receiving medication or tests for which participants were unaware of their purpose. These experiences of inadequate support exclude individuals who- even after having met with the nurse to get treatment- still had limited

understanding about STIs. These experiences ranged from moderate examples where participants felt inconvenienced or stigmatized to extreme examples where participants were given incorrect information.

One 30-year-old female participant's summary of her experience with a clinician showcases various challenges including a negative attitude from the nurse, poor counselling, and insufficient communication about how to promote positive health seeking behaviours in the future:

> *Participant: The Sister didn't say much. She was not in a right mood. She gave me an injection and gave me pills. I didn't feel right because if you are a person who talks to people, you must be in a right mood, but she...*
>
> *Counselor: Didn't she say anything about using a condom?*
>
> *Participant: No, she didn't say anything. She just gave me pills. She asked what I came for. I said I came for a pap smear. She said I cannot do a pap smear because I did it last year. I kept quiet. I said okay. She said [again] why did you come now? I said, I can feel it underneath that I have an itch... She said you must go and come with your partner tomorrow. I left.*

More extreme examples of inadequate support included judgmental attitudes and/or misinformation from the clinical staff. As a 19-year-old male participant highlighted:

> *What I was told about having an STI is that it is wrong. If you leave it inside you for a long time, it will damage you. What will happen is that you will have your private part removed. That's what I was told by the nurse there.*

Despite this range of experiences, many participants found clinic visits to be inevitable and necessary, particularly for receiving treatment. Female participants expressed limited resistance about going to the clinic in order to address their symptoms quickly, while male participants more frequently described delaying their visit to the clinic and instead, opting for more informal treatments provided at pharmacies or by their friends or partners.

Interpersonal Barriers

Specific interpersonal barriers to notification were most commonly fear of stigma from partners or the surrounding community, concerns about being accused of infidelity, and/or concern about violent reactions from partners. One-on-one interviews with the counsellors revealed similar concerns. As one counsellor stated:

> *The main thing that I've noticed … when it comes to informing the partners: it's stigma. 'People are going to think that I'm cheating. People are going to think that I have multiple partners.'*

Stigma was perceived as a barrier because of generally stigmatised attitudes about sex, the concern about people finding out about the infection in the enclosed township community, and the aforementioned concern about STIs becoming HIV.

Accusations about infidelity and concerns about violent reactions from partners were cited by men and women, although women were much more likely to anticipate the accusations or threats. Some men were unabated about blaming their female partners for the infection, even after acknowledging their concurrent relationship(s). As one 32-year-old man explained:

> *She will not be afraid when I say, 'you must go [to the clinic].' She knows I can beat her. I will tell her that I got [this infection] from her. 'That means you go with some dirtiness. Let's go to the clinic whilst it is still early.'*

Men were frequently described by female participants as being difficult or stubborn, which complicates women's ability to alter risk behaviours and/or effectively discuss partner notification. These circumstances highlight an interpersonal power dynamic that men appear to hold over their female partners. Despite this, many participants understood the importance of their partner receiving treatment and would not be dissuaded from notifying about the STI. As a 24-year-old female participant explained:

He can insult me and what-not, but even if that happens, I don't have a problem with that. As long as I have told him 'Okay listen brother, you must go to the clinic. You will tell them that you have an STI. So please go.' And I think he will go.

Two overarching trends emerged as important for contextual insight. The majority of both female and male participants discussed concurrency as being a consideration for partner notification. For women, awareness of their male partners' concurrent relationship(s) was often accepted as inevitable and negotiating condom use could be perceived as a challenge. Men were often confident that notification would either be received as symbolic of their care for their partners or that their partners would attend a clinic visit without protest; for this reason, they were often open to notifying most of their re-occurring sex partners about the STI. Both men and women frequently cited drug and alcohol use as contributing to sexual risk behaviours.

Impact of the Intervention

Overall, this intervention was helpful in informing participants about STIs and the importance of partner notification. Evidence for this was found in several participants' specific comments about how the intervention changed their way of thinking and/or how they felt encouraged to use barrier methods of protection with fewer partners. As a 24-year-old male participant explained:

I learned a lot; I learned some things I didn't know. And other diseases we discussed here have never occurred to me before. I am going to try to avoid them totally. I wouldn't have known those things and I would neglect them. But now I know what caused this in me and that if this happens, I must go to the clinic.

Women were generally more expressive about how the intervention affected their way of thinking. Often aware of their partners' concurrent relationships, numerous female participants were interested in the session's individualized exploration of their sexual network. This often concluded with a commitment to partner notification and barrier methods for protection. As a 32-year-old female participant concluded:

It depends on him if he tells his other partners [about the STI], but I will not have sex with him without a condom.

While the intervention was often perceived to be informative, the frequency of sessions lasting less than 60 minutes, being interrupted by participants, or being dominated by the counsellors may warrant an adaptation to the sessions' curriculum.

Discussion

The greatest contribution of this study is the finding that South Africa's generalised HIV burden is a facilitator to partner notification of STIs. HIV positive participants were concerned about their well-being and the intervention was a useful learning opportunity for health promotion. HIV negative participants were concerned with maintaining their status and were also influenced by their new understanding of STIs. Overall, widespread preliminary understanding and framing of HIV and how it is transmitted within this high incidence community is a window of opportunity for health workers to discuss other STIs.

Single session interventions are commonly cited to be effective in mitigating forward STI transmission because of their efforts to include index patients with their health seeking behaviours and to strengthen communication skills for notification (Trelle et al., 2007; Young et al., 2007). Such interventions have been shown to be successful in resource constrained, high prevalence settings (Moyo et al., 2002); the findings from this study provide additional support that interventions conducted by trained lay counsellors can encourage STI-infected individuals to notify their partners about their STI because of their increased understanding of the infection and strategies for notification. While enhanced counseling sessions were often perceived positively, the parent study will address a final verdict regarding the feasibility of the detail and length of enhanced sessions compared to other methods of delivery. Nevertheless, the findings from this sub-study add to the literature which suggests that single session interventions should be prioritised as an enabling pathway for effective partner notification practices to take place (Wakasiaka et al., 2003).

Commonly cited barriers to notification include perceived stigma from society, providers, or STI patients themselves (Liu et al., 2002; Wang et al., 2012; Pavlin et al., 2010), inability or unwillingness to contact casual or anonymous partners (Gursahaney et al., 2011), and anticipated violent reactions from male partners (Jones et al., 2013). The findings from this research highlight that while these interpersonal concerns are anticipated by patients, misconceptions about STIs and inadequate support from the clinic are prevalent in this setting and are indicative of wider health education and health system challenges (Ham et al., 2016). In order to facilitate partner notification, this study recommends additional provider training that promotes STI education and support for infected individuals. In addition, power imbalances between men and women must be addressed in order to reduce stigma, concurrency, and blame on females for being STI reservoirs.

There are several limitations to this study design. Selection bias may have impacted the results of this study because participants were purposively rather than randomly selected in order to maximise the study's resources. Having more verbally responsive participants may have also enabled reporting bias in participants' professed intentions; while notification intentions may have been subjected to this bias, it should be acknowledged that this was a study of intentions and notification practices will be revealed in the parent study's publication. There were some inconsistencies in the data that would have benefitted from follow-up questions and additional counsellor training, however as secondary data collection, this study was unable to facilitate those benefits. Finally, this study may only be a reflection of an urban South African setting, however these findings could impact similar settings because of their emphasis on structural and interpersonal barriers to notification.

The information delivered during this intervention challenges interpersonal power balances between partners and encourages participants to be more included in their health seeking and in the health system; this is evidenced by the finding that most participants intend to notify their partners about their STI using a face-to-face notification method. Overall, barriers for partner notification in this South African setting include structural issues such as inadequate support and

health education from the health system and within the community as well as gender power dynamics. Future efforts to mitigate high STI rates should be cognizant of these considerations. Single session interventions can be effective in facilitating partner notification, particularly when they use language that patients already understand because of their familiarity with HIV in their homes and/or communities.

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Part D: Appendices

Consent Form

School of Public Health and Family Medicine
University of Cape Town

Name of researcher:

Julia M. Wood, Master of Public Health Candidate

Title of research project:

Exploring Motivation to Notify and Barriers to Partner Notification of Sexually Transmitted Infections

By answering the questions proposed to me by the researcher:

- I agree to participate in this research project.
- The researcher has informed me about the purpose of her study.
- I have read this consent form and the information it contains; I have had the opportunity to ask questions about this research.
- I agree to my responses being used for education and research purposes only.
- I understand that my privacy will be respected in the following ways *(please tick as appropriate):*

My interview will be audio-recorded and destroyed after it is transcribed.	
My name and personal details will not be revealed in the published research.	
My responses will be confidential and will only be included in published research if they are anonymized.	

- I understand that I am under no obligation to take part in this project; my participation is completely voluntary.
- I understand I have the right to withdraw from this interview at any stage.
- I understand that this research might be published in a research journal. In addition, this research will also be available to readers in the University of Cape Town's library in printed form, and possibly in electronic form as well.

Name of Participant: _____

Signature: _____

Date: _____

Researcher Signature: _____

Date: _____

Letter of Approval from the Ethics Committee

UNIVERSITY OF CAPE TOWN
Faculty of Health Sciences
Human Research Ethics Committee

Room E52-24 Old Main Building
Groote Schuur Hospital
Observatory 7925
Telephone [021] 406 6338 • **Facsimile** [021] 406 6411
Email: lamees.emjedi@uct.ac.za
Website: www.health.uct.ac.za/fhs/research/humanethics/forms

24 March 2016

HREC REF: 152/2016

Prof C Mathews
Social and Behavioural Division
Public Health & Family Medicine
Falmouth Building
Medical School

Dear Prof Mathews

PROJECT TITLE: EXPLORING MOTIVATION TO NOTIFY AND BARRIERS TO PARTNER NOTIFICATION OF SEXUALITY TRANSMITTED INFECTIONS (Masters-candidate-J Wood)

Thank you for submitting your study to the Faculty of Health Sciences Human Research Ethics Committee for review.

It is a pleasure to inform you that the HREC has **formally approved** the above-mentioned study.

Approval is granted for one year until the 30th March 2017.

The HREC acknowledges that the following Masters in Public Health Student, Ms Julia Wood, will also be part of the above-mentioned study.

Please submit a progress form, using the standardised Annual Report Form if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.
(Forms can be found on our website: www.health.uct.ac.za/fhs/research/humanethics/forms)

Please quote the HREC REF in all your correspondence.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Yours sincerely

PROFESSOR M BLOCKMAN
CHAIRPERSON, FHS HUMAN RESEARCH ETHICS COMMITTEE
Federal Wide Assurance Number: FWA00001637.
Institutional Review Board (IRB) number: IRB00001938
This serves to confirm that the University of Cape Town Human Research Ethics Committee complies to the Ethics Standards for Clinical Research with a new drug in patients, based on the Medical

Instructions from the Target Journal:

Sexually Transmitted Infections

http://authors.bmj.com/submitting-your-paper/instructions-for-authors/

"Sexually Transmitted Infections selects original papers on the basis of their likely appeal to its readership. Papers we select for publication will:

- Be of interest to practitioners, policy makers, trainees and researchers wishing to keep themselves up to date in the field of clinical, epidemiological, sociological and laboratory aspects of STIs and HIV.
- Be clearly and correctly expressed. Many of our valued contributors do not speak English as their first language. If you feel unsure of your competence in English, please show your paper to a colleague who speaks English, preferably a native speaker, before making your submission.
- Be intelligible to our broad international readership. Do not assume familiarity with cultural or institutional facts that are specific to the place in which the research is undertaken.
- Please explain any details that are likely to cause confusion or misunderstanding for readers from other cultural backgrounds.
- Papers are considered on the basis that they are submitted solely to this journal and do not duplicate material already published, or submitted, elsewhere. In cases of doubt, and whenever material from the same study/dataset has been published elsewhere, please mention this to the editor in your cover letter, and explain the relationship between the manuscripts and how they differ. Please also submit the published material in a supplementary file for editors and reviewers along with your manuscript. We recognise that there may be a need to report the same Methods for multiple studies. If this is the case, please consult http://publicationethics.org text recycling guidelines, and consider what repeated information can be given by referring to another manuscript, or in a Web Only supplement.

Submission guidelines

For guidelines on submission and editorial policies for *Sexually Transmitted Infections* please refer to the BMJ Author Hub. Here you will find information on planning your research through to submitting and promoting your research.

Research studies

Your paper should be well organized and clearly structured. You should use guidelines for reporting, as discussed below, so as to ensure that all necessary elements of your study are reported. Guidelines improve the quality of reporting so that reviewers find less to criticize, and help the editors to ensure that all necessary information is concisely presented. This will increase the chances of your published work being cited and its implications for practice being taken seriously.

Whatever your study design, you should upload an appropriate checklist (e.g. CONSORT checklist) as a Supplementary File for Review. This helps editors and reviewers decide whether all necessary information has been presented.

Your introduction (and your abstract) should contain a clear statement of the objectives of the study and the major hypothesis tested or research question posed. Make sure that the messages of your abstract are in agreement with the messages in the body of the article.

Your methods section should contain, in all cases, information about:

- design – including, where appropriate, such factors as prospective, randomisation, blinding, placebo control, case control, crossover, sample size calculation, a statement of the primary outcome and whether a protocol is available;
- setting – including, where appropriate, the level of care (e.g. primary/secondary, and the number of participating centres). Be general rather than give the name of the specific centre, but give the geographical location if this is important ;
- participants – including, where appropriate, numbers eligible and enrolled in the study, sex, and ethnic group. Give clear definitions of how participants were selected, of entry and exclusion criteria.

In the case of trials the methods section should also contain information regarding interventions – what, how, when, and for how long.

General guidance

Some types of research study that we frequently publish are:

- Controlled trials (randomised or not randomised);
- Observational studies;
- Diagnostic accuracy studies;
- Basic science;
- Qualitative research;
- Service improvement or quality improvement reports, which may include audits;
- Economic evaluations;
- Modelling studies

Authors may choose to present their research in one of two forms:

- a full-length article (with a maximum of 3000 words, and a maximum of four tables/figures and 30 references except in the case of systematic reviews where 60 references are permitted);
- a short report (with a maximum of 1500 words, and a maximum of one table/figure and 10 references).

Original article or short report?

You should consider presenting your findings as an original article rather than a short report in the following situations:

- where the research is generalizable and of widespread significance;
- where your work provides a stand-alone contribution to the literature;

- where the findings relate to a substantial piece of research, and not only a pilot or preliminary investigation.

You should consider presenting your findings as a short report rather than an original article in the following situations:

- where the research, though interesting, is of mainly local significance;
- where your findings provide a largely additional or complementary perspective on existing research;
- where these findings correspond to a still early and relatively incomplete stage in the development of your project.

Both original articles and short reports should be prefaced with an abstract of no more than 300 words (additional to the 3000/1500 words of the main body of the text). Structure your abstract under the headings: Objectives, Methods, Results, Conclusions. For an example of an abstract, please view the PDF files of an article and a short report given below. Original articles must, in addition to an abstract, include as part of the text a key messages box. This should contain three or four bullet points of no more than 25 words each, highlighting the main features of, and lessons from, the paper. For an example of a key messages box, please view the PDF file of an article given below.

Word count and supplementary material

The vast majority of articles fit comfortably within our word limits. However it is sometimes appropriate to provide supplementary material which may be published Web Only. Examples may include questionnaires, additional data tables, additional references or detailed aspects of laboratory methods which would be of interest only to a specialist. Any supplementary material must be uploaded as a Supplementary File for Review and should be clearly referenced in the body of the paper to e.g. Web reference 1, Appendix 2. The publication of supplementary material is at the discretion of the Editor in Chief and should not be considered a substitute for presenting a clear, complete manuscript within the word limit.

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